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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,018	11/24/2003	Ritva Verho	2530-120	3149

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EXAMINER	
ZEMAN, ROBERT A	
ART UNIT	PAPER NUMBER
1645	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	01/31/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 01/31/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO-PAT-Email@rfem.com

Office Action Summary	Application No.	Applicant(s)	
	10/720,018	VERHO ET AL.	
	Examiner	Art Unit	
	Robert A. Zeman	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) *9-30* is/are withdrawn from consideration.

5)☒ Claim(s) *31 and 32* is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10-18-2006 has been entered.

The amendment filed on 10-18-2006 has been entered. Claims 3-6 and 31-32 have been amended. Claims 1-32 are pending. Claims 9-30 remain withdrawn from consideration as being drawn to non-elected inventions. Claims 1-8 and 31-32 are currently under examination.

Claim Rejections Withdrawn

The rejection of claims 3 and 6 under 35 U.S.C. 112, second paragraph, as being rendered vague and indefinite by the use of the term "functionally equivalent derivatives" is withdrawn in light of the amendment thereto.

The rejection of claims 4 and 5 under 35 U.S.C. 112, second paragraph, as being rendered vague and indefinite by the use of the term "fungal origin" is withdrawn in light of the amendment thereto.

The rejection of claims 1-4 and 6-8 under 35 U.S.C. 102(b) as being anticipated by Richard et al. (FEBS Letters, 1999, Vol. 457, pages 135-138) is withdrawn in light of Applicant's arguments.

The rejection of claims 1-8 under 35 U.S.C. 103(a) as being unpatentable over Richard et al. (FEBS Letters, 1999, Vol. 457, pages 135-138). in view of Dien et al. (Applied Biochemistry and Biotechnology, 1996, Vol. 57/58 pages 233-240 – IDS) is withdrawn in light of Applicant's arguments.

New Grounds of Rejection

35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is rendered vague and indefinite by the use of the term "a gene". The term "a" suggests that there are more than one gene encoding the claimed enzyme whereas the specification is drawn to an enzyme from a specific fungal species.

Claim 3 is rendered vague and indefinite by the use of the phrase "an amino acid sequence of...". It is unclear whether said limitation is meant to refer to the full length of the recited sequence or any portion thereof that is a dimer or larger.

Claims 3 and 6 are rendered vague and indefinite by the use of the phrase "the NADH dependent L-xylulose reductase activity of SEQ ID NO:2". It is unclear what Applicant is referring to as sequences are abstractions and do not possess any physical characteristics. It is suggested that the phrase "the NADH dependent L-xylulose reductase activity of the enzyme with the sequence of SEQ ID NO:2" be used.

Claim 6 is rendered vague and indefinite by the use of the phrase "a nucleic acid sequence of...". It is unclear whether said limitation is meant to refer to the full length of the recited sequence or any portion thereof that is a dimer or larger.

Claims 3 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being rendered vague and indefinite by the use of the term "functionally equivalent variant"

As no specific functions are disclosed to be engendered with the phrase "the NADH dependent L-xylulose reductase activity of the enzyme with the sequence of SEQ ID NO:2", it is impossible to determine what functions must be maintained in order for a given protein to be considered a "functionally equivalent variant". Hence, it is impossible to determine the metes and bounds of the claimed invention.

35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Legare et al. (Endocrinology, 1999, Vol. 140 No. 7, pages 3318-3327).

Legare et al. disclose the cloning and characterization of the P34H sperm protein (L-xylulose reductase)[see Abstract and 3319]. Moreover, it is deemed, in absence of evidence to the contrary, that the P34H sperm protein disclosed by Legare et al. constitutes a "functionally equivalent variant" of the enzymes with the sequences recited

in claims 3 and 6 (SEQ ID NO:1-2). Therefore, Legare et al. anticipates all the limitations of the rejected claims. It should be noted that the identifiers "L-xylulose reductase", "P34H sperm protein" are synonyms used to identify the same protein and hence would necessarily possess the same biological characteristics.

35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Legare et al. (Endocrinology, 1999, Vol. 140 No. 7, pages 3318-3327 in view of Dien et al. (Applied Biochemistry and Biotechnology, 1996, Vol. 57/58 pages 233-240 – IDS).

Legare et al. disclose the cloning and characterization of the P34H sperm protein (L-xylulose reductase)[see Abstract and 3319]. Moreover, it is deemed, in absence of evidence to the contrary, that the P34H sperm protein disclosed by Legare et al. constitutes a "functionally equivalent variant" of the enzymes with the sequences recited in claims 3 and 6 (SEQ ID NO:1-2). Since the identifiers "L-xylulose reductase", "P34H sperm protein" are synonyms used to identify the same protein and hence would necessarily possess the same biological characteristics.

Legare et al. differs from the instant invention in that they do not disclose L-xylulose reductase from *Ambrosiozyma monospora*.

Dien et al. disclose the yeast *Ambrosiozyma monospora* is capable of utilizing pentose sugars (see abstract).

It would have been obvious to one of skill in the art to utilize the methods disclosed by methods disclosed by Legare et al. to identify the enzyme that allows the utilization of pentose sugars (since P34H has the same characteristic). To identify said enzyme the skilled artisan would first separate the genetic material from the yeast (meeting the limitations of claims 1-7). Claims 1-6, as written, read on chromosomal yeast DNA. Adherence to the methodologies of Legare et al. would result in the identification and recombinant production of the various yeast enzymes involved in pentose metabolism. One would have been motivated to map out the pathway in the yeast disclosed by Dien et al. in order to be able to produce recombinants to economically produce ethanol from hemicellulose biomasses (see page 233 of Dien et al. with regard to the importance of hemicellulose fermentation).

Conclusion

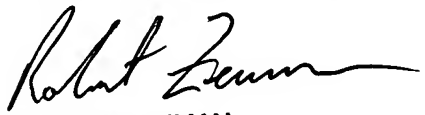
Claims 1-8 are rejected.

Claims 31 and 32 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Zeman whose telephone number is (571) 272-0866. The examiner can normally be reached on Mon-Thur 7am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Siew can be reached on (571) 272 0787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



ROBERT A. ZEMAN
PRIMARY EXAMINER
January 21, 2007